THE CLIMATE GAP

EXECUTIVE SUMMARY

Inequalities in How Climate Change Hurts Americans & How to Close the Gap

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Introduction

Climate change is real. But establishing that fact required researchers and scientists to gather the evidence and connect the dots between countless data points to determine what was causing our atmosphere to warm – and then to employ their analysis to understand the impact climate change would have on people and countries.

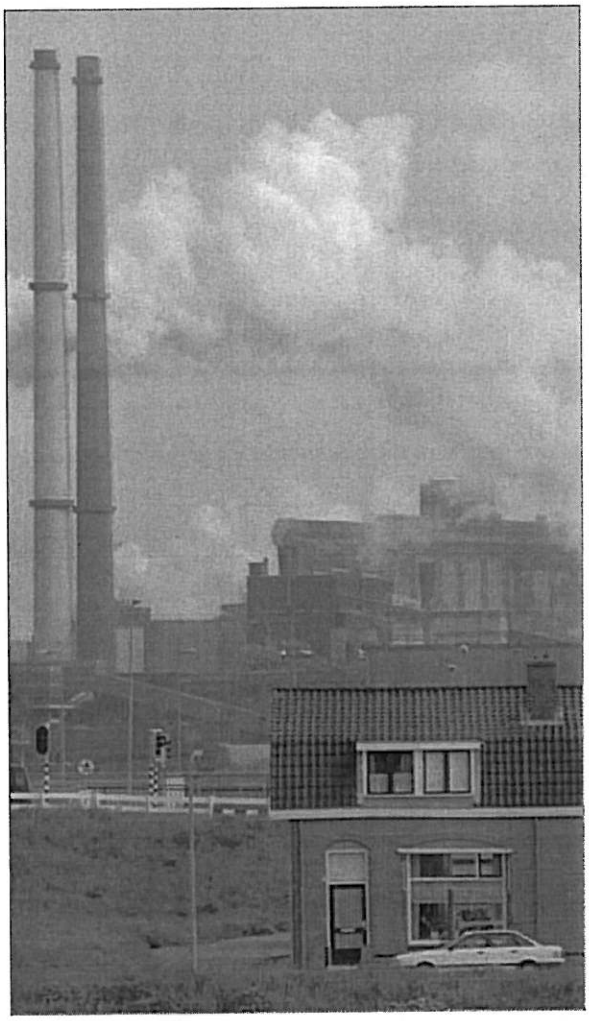
The climate gap is also real. Climate change does not affect everyone equally, and it is people of color and the poor who will be hurt the most. This report – an analysis of available data – comprehensively connects the dots, uncovering the often hidden unequal impact the climate crisis has on people of color and the poor in the United States. It also uncovers how to best address the climate crisis *and* the climate gap—by highlighting policies that are both effective and ameliorate the special pressures faced by people of color and the poor.

The climate gap is like a movie with multiple and seemingly unrelated storylines that all converge at the end. As researchers, we have woven together these disparate threads of data—some of which have been known and others that were until now undiscovered. The resulting tapestry points to a denouement that is decidedly tragic — unless policymakers and regulators intervene to solve the climate crisis in ways that prioritize those who are least able to anticipate, cope with, resist and recover from the worst effects of climate change.

The climate gap is an issue of human rights, public health, and basic fairness. But it's more than that. If we protect those who are most vulnerable, we will effectively protect all of us. Properly maintaining the levees would have shielded the Lower Ninth Ward and would have saved all of New Orleans against Hurricane Katrina. Similarly, by choosing policies that shield against the very real dangers facing poor neighborhoods and people of color we will insure that climate policy will be effective for the nation as a whole.

The climate gap is of special concern for California, partly because the state is home to one of the most ethnically and economically diverse populations in the country and partly because the state has led the country in addressing global warming through policy. This report focuses on the California context, although we rely on a broader body of research and sketch out the implications for the policies that can best help the U.S. tackle both the climate crisis and the climate gap.

To read the full report go to http://college.usc.edu/geography/ESPE/perepub.html



Key Findings

The Climate Gap & Public Health

Extreme Heat Waves

Extreme weather events such as heat waves, droughts and floods are expected to increase in their frequency and intensity in the next hundred years due to climate change (IPCC 2007), which could increase the risk of illnesses and deaths linked to extreme heat.

- In a study on nine California counties from May through September of 1999–2003, researchers found that for every 10°F (5.6°C) increase in temperature, there is a 2.6% increase in cardiovascular deaths. The risks were higher for African Americans. In Los Angeles, African Americans have a projected heat-wave-mortality rate that is nearly twice that of other Los Angeles residents.

- California's agricultural and construction workers, who are predominantly Mexican and Central American immigrants, have experienced severe heat-related illness and death with data pointing towards possible increasing trends in recent years (English et al. 2007; Luginbuhl 2008).

- Low-income urban neighborhoods and communities of color are particularly vulnerable to increased frequency of heat waves and higher temperatures because they are often segregated in the inner city (Schultz et al. 2002; Williams and Collins 2001), which is more likely to experience the "heat-island" effect, that commonly occurs in urban areas because dark-colored materials used to construct roads and buildings absorb heat and do not allow it to dissipate at the same rate as soil, grass, forests, and other less industrial materials (Oke 1973).

- Lack of access to air conditioning is linked to the disproportionate risk of heat-related illness and death among the urban elderly in the United States – particularly those who are low-income and of color (Kovats and Hajat 2008; Semenza et al. 1996). Overall, low-income families and people of color are less likely to have access to air conditioning (English et al. 2007). In the Los Angeles-Long Beach Metropolitan Area, for example, approximately twice as many African Americans do not have access to air conditioning compared to the general population. Similar trends hold for Latinos and communities living below the poverty line (UCSB 2004). Nationally, African Americans were found to have a 5.3% higher prevalence of heat-related mortality than whites and 64% of this disparity is potentially attributable to disparities in prevalence of central AC technologies (O'Neil, Zanobetti et al. 2005).

- Transportation is also a critical coping tool during a heat wave, but African Americans, Latinos and Asians are less likely to have access to a car. In the Los Angeles-Long Beach Metropolitan Area, higher proportions of African-American (20%), Latino (17.1%), and Asian (9.8%) households do not have access to a car (UCSB 2004), compared to White households (7.9%), thus restricting their capacity to move to cooler areas and government-sponsored cooling stations during extreme heat events.

Increased Air Pollution

Climate change threatens to exacerbate dirty air. Higher temperatures hasten chemical interactions between nitrogen oxide, volatile organic gases and sunlight that lead to increases in ambient ozone concentrations in urban areas (Jacobson 2008). In California, five of the smoggiest cities are also the locations with the highest projections of ambient ozone increases associated with climate change, as well as the highest densities of people of color and low-income residents.

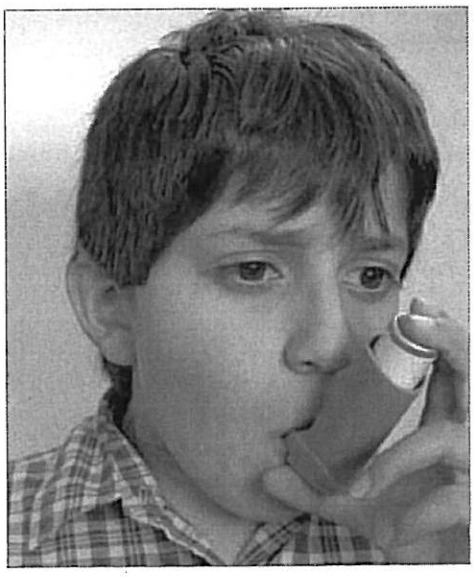
- Recent studies by many of the same authors of this report documented that people of color and the poor breathe dirtier air than other Americans (Morello-Frosch R and Jesdale 2006, B; Pastor M, Morello-Frosch RA, Sadd J 2005).
- Five of the ten most ozone-polluted metropolitan areas in the United States (Los Angeles, Bakersfield, Visalia, Fresno, and Sacramento) are in California (Cordova et al. 2006; ALA 2008). Because of this, Californians already suffer a relatively high disease burden from air pollution—including 18,000 premature deaths each year and tens of thousands of other illnesses (CARB 2008a).
- People of color and low-income families in these urban areas are likely to lack health insurance (Cordova et al. 2006). A lack of health insurance among vulnerable populations that are exposed to elevated levels of air pollutants may lead to greater health impacts from air pollution—particularly compared with those who have health insurance.

The Climate Gap & The Economy

Skyrocketing Prices for Basic Necessities

Prices for basic necessities are expected to skyrocket as a result of climate change. The Natural Resources Defense Council estimates that under a business-as-usual scenario, between the years 2025 and 2100, the cost of providing water to the western states in the United States will increase from $200 billion to $950 billion dollars per year, representing an estimated 0.93%–1% of the United States' gross domestic product (GDP) (Ackerman and Stanton 2008). Under the same scenario, annual U.S. energy expenditures (excluding transportation) will be $141 billion higher in 2100 than they would be if today's climate conditions continued throughout the century. This increase is equal to approximately 0.14% of the United State's GDP (Ackerman and Stanton 2008).

- These price increases will disproportionately hurt the poor in the United States because they spend the highest proportion of their income on these necessities (BLS 2002).



- There is nearly a three-fold difference in the proportion of income that goes towards water between households in the lowest income bracket versus households in the highest income bracket.

- Households in the lowest income bracket use more than twice the proportion of their total income on electricity than households in the highest income bracket.

- Food, the commodity that represents the largest portion of total spending out of all the basic necessities in all expenditure categories, shows a two-fold discrepancy between the lowest and the highest income brackets (Cordova et al. 2006).

Reduced or Shifting Job Opportunities

The majority of jobs in sectors that will likely be significantly affected by climate change, such as agriculture and tourism, are held by low-income people of color (UCSB 2005; EDD 2004). These workers would be the first to lose their jobs in the event of an economic downturn due to climatic troubles.

- Impacts on the agricultural sector are likely to exacerbate the climate gap in California. Latinos comprise 77% of the workforce in this sector and the majority of these men and women are also categorized as low-income (EDD 2004). As climate change adversely affects agricultural productivity in California, laborers will be increasingly affected by job loss. For example, the two highest-value agricultural products in California's $30 billion agriculture sector are dairy products (milk and cream, valued at $3.8 billion annually) and grapes ($3.2 billion annually) (CASS 2002). Climate change is expected to decrease dairy production by between 7%–22% by the end of the century (Pittock 2001). It is also expected to adversely affect the ripening of wine grapes, substantially reducing their market value (Hayhoe 2004). Communities in the Central Valley, where agriculture is most concentrated and which has a significant proportion of low-income Latino residents, would be the hardest hit by these projected declines in agricultural productivity linked to climate change.

- In California, seaside destinations and mountainous regions are likely to be particularly impacted by climate change, which will diminish tourism jobs available in those areas (IPCC 2007; UNWTO 2007). In all of the major industries that have been generated by tourism—with the exception of the entertainment industry—people of color make up the majority of the workforce and could be vulnerable to layoffs and decreased pay (Cordova et al. 2006).

- Even excluding agriculture, industries in California that are considered heavy emitters of greenhouse gas emissions have a workforce that is sixty percent people of color; the non-heavy emitting industries are fifty-two percent workers of color. These heavy emitting industries tend to pay slightly higher wages and be more unionized; addressing greenhouse gas emissions without an adequate plan for transition for incumbent workers and targeting opportunities for communities of color in the new "green jobs" sector could widen the racial economic divide (Buffa, Zabin, Brown and Graham-Squire 2008).

Conclusion and Recommendations

This analysis of available data connects the dots between some facts we've known and others we haven't to reveal a hidden climate gap. Policymakers have a clear choice: Ignoring the climate gap could reinforce and amplify current as well as future socioeconomic and racial disparities. On the other hand, policymakers can work to close the climate gap through strategies that address the regressive economic and health impacts of climate change, and that lift all boats by ensuring that everyone shares equally in the benefits of climate solutions, and no one is left bearing more than their fair share of the burdens.

We recommend the following:

Close the climate gap by auctioning permits or establishing a fee and invest revenue in communities that will be hardest hit.

Currently, federal and state policymakers appear to be moving forward with a framework that includes capping the total amount of greenhouse gas emissions, lowering the cap over time and issuing permits as a way to ensure no one goes over the limit. Yet few of the most prominent climate change mitigation strategies close the climate gap, and in some cases, policies may potentially widen the gap. If emission credits are allocated for free, there is concern that these policies will be regressive (Dutzik et al. 2007).

Alternatively, under cap-and-auction or fee-based strategies, charging a fee to polluters could generate sizable revenues that would be used to offset higher costs—particularly for those who can least afford it (Hepburn et al. 2006). Revenues could be distributed to the public through tax cuts, investments in clean energy, efficiency measures, and mass transit, high-value investments such as education, or through direct periodic dividends to consumers (CBO 2007a).

Close the climate gap by coordinating reductions in greenhouse gas emissions with opportunities to reduce toxic pollutants in neighborhoods with the dirtiest air.

There is enormous potential to get more for our investments in reducing greenhouse gas emissions by focusing on the dirtiest sources that cause both climate change and health problems locally.

In general, the most prominent trading and fee systems do not necessarily do that. The problem is that it really makes no difference to climate change if you reduce greenhouse gas emissions in a dense urban neighborhood or an unpopulated rural area – but it can make a huge difference to the public health of those breathing the particulate pollution or toxic air in the more populated locales.

Research demonstrates that sources of toxic pollution that contribute to poor health are often concentrated in neighborhoods with the highest populations of low-income families and people of color. Policymakers have an opportunity to be efficient and effective stewards of taxpayer dollars by focusing on climate polluters disproportionately responsible for regional greenhouse gas emissions and creating toxic air in the most polluted neighborhoods. Such an approach might complicate the planning and implementation of market or fee systems but the benefits for fairness and public health far outweigh the modest costs of extra complexity in the system.

To facilitate this, mapping and analytical tools would allow policymakers to identify the neighborhoods with the greatest opportunities to maximize greenhouse gas emission reductions while also cleaning up toxic air pollution.

Close the climate gap by adopting policies that will lessen the climate-related health impacts faced by people of color and the poor.

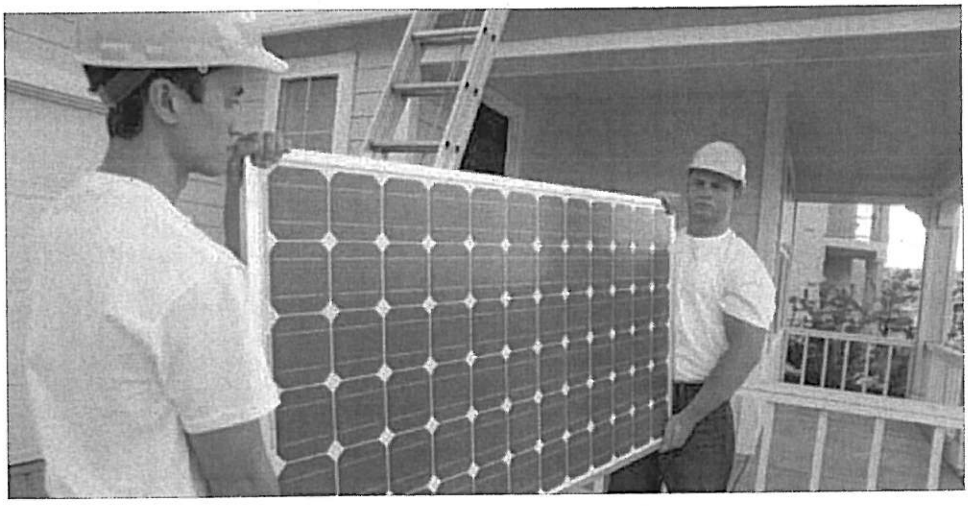
These policies should include:

- Strategies to prepare for and prevent heat-related illness including messages and information that are disseminated in urban communities of color and high-poverty neighborhoods, and targeted toward parents and caregivers of young children and the elderly (Knowlton et al. 2009); and
- Mapping technologies to identify neighborhoods vulnerable to the impacts of excessive heat, and extreme weather events, with results made publically available using web-based mapping tools.

Close the climate gap by developing policies that protect against climate-related economic disparities faced by people of color and the poor.

Because both climate change and climate solutions are likely to negatively impact certain economic sectors more than others, policies must take into account how low-income families and people of color will be affected and what more can be done to help them adjust to major economic shifts. Some important policy directions include:

- Examining which GHG source sectors hold the most pollution reduction promise without economic disruption, both in terms of overall emission reductions and environmental health benefits (Prasad 2008);
- Anticipating and addressing inevitable job shifts and retraining needs to maximize opportunities for low-income communities and communities of color to successfully transition to and benefit from a new, clean energy economy; and
- Ensuring that revenue generated from climate policy will help high-poverty neighborhoods absorb the higher prices for energy and other basic necessities.



Close the climate gap by closing the conversation gap.

Because climate change will affect some populations more than others, it is important to capture the specific vulnerabilities of different neighborhoods. Local expertise, community wisdom, and other contextual information are important to supplement technical knowledge. Researchers hoping to generate climate change-impact knowledge that is sensitive to community-specific concerns should integrate community participation in their studies (Morello-Frosch et al. 2005; Minkler and Wallerstein 2003; Coburn J. 2009). To proactively address the climate gap, ensure the effectiveness of preparedness and adaptation strategies and alleviate environmental health inequalities, agency officials and policymakers must ensure that vulnerable communities play a prominent role in shaping future solutions to climate change (Elliott et al. 2005).

But it's more than just the regulatory agencies and affected communities. Policy differences between those who favor "cap and trade" vs. those who support carbon fees have led to tensions between advocates that share the goals of protecting the planet and protecting the poor. Concerns about whether climate policy will cost or create jobs have led to strains between those working to recover the economy and those working to save the environment. These tensions have led to a conversation gap.

One of the first steps to addressing the climate gap is addressing this conversation gap. Working together across sectors and constituencies – and insuring that the effects of either climate change and climate policy are not unequally felt by the poor and communities of color – is exactly the recipe we need to cool the planet and create economic and health opportunities for everyone.

Methodology

This project analyzes available data on the disparate impacts of climate change and mitigation policies on low socioeconomic status (SES) groups in the United States that is relevant to the California context. Information in this review is drawn primarily from research that addresses these issues directly. We have also secondarily drawn information from climate change policy, human health, and environmental justice literature that provides background and context for these issues.

References

To view details on all references outlined in this executive summary, please see the full report at http://college.usc.edu/geography/ESPE/perepub.html

About the Research Team

Rachel Morello-Frosch is Associate Professor in the Department of Environmental Science, Policy and Management and the School of Public Health at the University of California, Berkeley. Dr. Morello-Frosch's research examines race and class determinants of environmental health among diverse communities in the United States. A focus of her work is the relationship between segregation and environmental health inequalities associated with air pollution, children's environmental health, and the intersection between economic restructuring and community environmental health. Currently, Dr. Morello-Frosch collaborates with colleagues and environmental justice organizations to research and address climate justice issues, including the social equity implications of proposed greenhouse gas reduction strategies in California associated with the AB32 Scoping Plan; and disparities in community capacity to adapt to environmental impacts of climate change. Her work is funded by the National Institutes of Health, the National Science Foundation, and the California Environmental Protection Agency.

Dr. Manuel Pastor is Professor of Geography and American Studies & Ethnicity at the University of Southern California where he also serves as Director of the Program for Environmental and Regional Equity (PERE) at USC's Center for Sustainable Cities and co-Director of USC's Center for the Study of Immigrant Integration (CSII). Pastor holds an economics Ph.D. from the University of Massachusetts, Amherst, and has received fellowships from the Danforth, Guggenheim, and Kellogg foundations and grants from the Irvine Foundation, the Rockefeller Foundation, the Ford Foundation, the National Science Foundation, the Hewlett Foundation, the MacArthur Foundation, the California Environmental Protection Agency, the California Wellness Foundation, and many others. In recent years, his research has focused on the economic, environmental and social conditions facing low-income urban communities in the U.S. His most recent book, co-authored with Chris Benner and Martha Matsuoka, is *This Could Be the Start of Something Big: How Social Movements for Regional Equity are Reshaping Metropolitan America* (Cornell University Press, 2009). Dr. Pastor currently serves on the Regional Targets Advisory Committee, a group advising the California Air Resources Board on methods to set goals for the reduction of greenhouse gas emissions through better land use planning.

Dr James L. Sadd is Professor of Environmental Science at Occidental College, Los Angeles, California. He earned his doctorate in geology at the University of South Carolina, Columbia. His research includes spatial analysis using geographic information systems and remote sensing tools, particularly to evaluate questions related to environmental exposure. His recent research is supported by contracts and grants from the Andrew W. Mellon Foundation, US Army Corps of Engineers, US Navy Office of Naval Research, NOAA SeaGrant.

Seth Shonkoff holds an MPH in epidemiology from UC Berkeley and is a Ph.D. candidate in the department of Environmental Science, Policy, and Management at UC Berkeley. Seth's work looks at social and environmental factors and their interactions with population health. He worked as an environmental analyst at the San Francisco Estuary Institute in Oakland, California investigating fate, source, and transport of persistent organic pollutants, heavy metals, and other contaminants. As an epidemiology and health policy analyst at the San Francisco Department of Public Health he researched the prevalence of HIV and other infectious diseases and appropriate screening policies for municipal clinics. His current work focuses on environmental health and equity issues and their intersections with climate change mitigation.

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